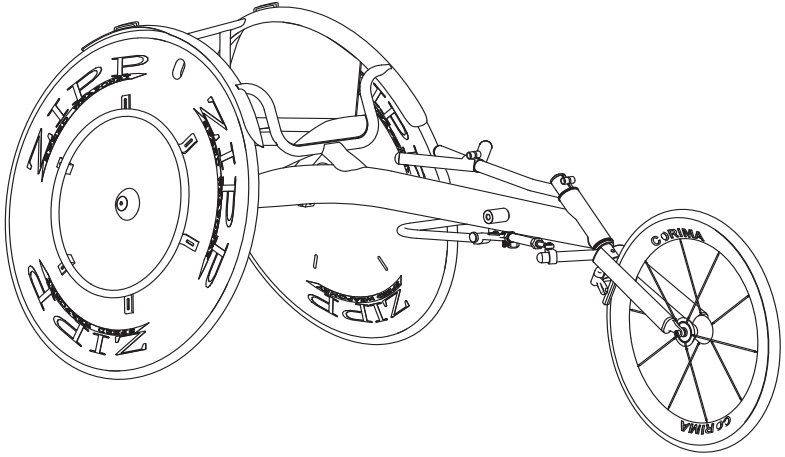
Invacare® Top End® Eliminator™ OSR Racing Chair



EN User Manual

This manual MUST be given to the user of the product.

BEFORE using this product, read this manual and save for future reference.

INVACARE®

Yes, you can.®

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User Manual

DEALER: This manual MUST be given to the user of the product.

USER: BEFORE using this product, read this manual and save for future reference.

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1 General

1.1 Symbols

Warnings

Signal words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage. See the information below for definitions of the signal words.

DANGER

Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage or minor injury or both.

IMPORTANT

Indicates a hazardous situation that could result in damage to property if it is not avoided.

Gives useful tips, recommendations and information for efficient, trouble-free use.

1.2 Dealer/Technician Information

The term “qualified technician” in this manual refers to an Invacare qualified technician or a Shimano® certified bicycle repair technician.

1.3 Warranty Information

United States Limited Warranty

PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.

This warranty is extended only to the original purchaser who purchases this product when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Invacare warrants the Eliminator OSR frame to be free from defects in materials and workmanship for a period of two years from date of purchase to the original owner or with a copy of the seller's invoice required for coverage under this warranty. All component parts including, but not limited to fork, compensator, and upholstery are warranted against defects in materials and workmanship for a period of one (1) year from the original invoice date except steering cylinders, cushion, bushings, bearings, cables and tires/tubes. Carbon fiber wheels are subject to the wheel manufacturer's warranty and are not warranted by Invacare. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address below. Provide dealer's name, address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

Limitations and Exclusions: The foregoing warranty shall not apply to serial numbered products if the serial number has been removed or defaced, products subjected to negligence, accident, improper operation, maintenance or storage, commercial or institutional use, products modified without Invacare's express written consent (including, but not limited to, modification through the use of unauthorized parts or attachments; products damaged by reason of repairs made to any component without the specific consent of Invacare, or to a product damaged by circumstances beyond Invacare's control, and such evaluation will be solely determined by Invacare. The warranty shall not apply to problems arising from normal wear, use on an indoor training roller, or failure to adhere to these instructions.

The foregoing warranty is exclusive and in lieu of all other express warranties. Implied warranties, if any, including the implied warranties of merchantability and fitness for a particular purpose, shall not extend beyond the duration of the express warranty provided herein and the remedy for violations of any implied warranty shall be limited to repair or replacement of the defective product pursuant to the terms contained herein. Invacare shall not be liable for any consequential or incidental damages whatsoever.

THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.

Canadian Limited Warranty

Cette garantie est seulement étendue à l'acheteur original qui achète ce produit quand nouvel et inutilisé d'Invacare ou un négociant. Cette garantie n'est pas étendue à aucune autres personne ou aucune entité et n'est pas transmissible ou ascribable à l'acheteur ou le propriétaire subséquent. La couverture sous cette garantie terminera sur n'importe lequel telle vente subséquente ou tel autre transfert de titre à aucune autre personne. Cette garantie vous donne des droits légaux spécifiques et vous pouvez avoir aussi d'autres droits légaux qui varie de l'état pour déclarer.

Invacare mérite le cadre d'OSR d'Eliminateur pour être libre des défauts dans les matériels et de l'exécution pour une période de deux ans de la date d'achat au propriétaire original. Tout le composant sépare y compris, mais n'a pas limité pour cintrer des tubes, le compensateur, et le revêtement est mérité contre les défauts dans les matériels et l'exécution pour une période de l'un (1) l'an de la date de facture originale sauf la direction des cylindres, le coussin, les bagnes, les rapports, les câbles et les fatigue/tubes. Les roues de fibre de carbone sont assujettis à la garantie du fabricant de roue et ne sont pas mérité par Invacare. Si dans telle période de garantie n'importe lequel tel produit sera révélé défectueux, tel produit sera réparé ou sera remplacé, à l'option d'Invacare. Cette garantie n'inclut pas le travail ou les frais d'expédition ont contracté dans l'installation de pièce de rechange ou la réparation de n'importe lequel tel produit. Le devoir seul d'Invacare et votre remède exclusif sous cette garantie seront limités à tel remplacement de et/ou de réparation.

Pour le service de garantie, s'il vous plaît contacter le négociant de que vous avez acheté votre produit d'Invacare. Dans l'événement vous ne recevez pas le service de garantie satisfaisant, s'il vous plaît écrire directement à Invacare à l'adresse au dessous. Fournir le nom du négociant, l'adresse, la date d'achat, indiquer la nature du défaut et, si le produit est mis en serie, indique le numéro de série. Ne pas retourner des produits à notre usine sans notre consentement préalable.

Limitations et Exclusions : La garantie qui ne précéde pas s'appliquera aux produits numérotés en série si le numéro de série a été enlevé ou a été défiguré, les produits ont exposé à la négligence, l'accident, l'opération déplacée, l'entretien ou l'emmagasinage, la publicité ou l'usage institutionnel, les produits ont modifié sans Invacare le consentement écrit exprès (y compris, mais pas limité à, la modification par l'usage de parties ou les attachements non autorisées ; les produits endommagés par la raison de réparations faites au composant sans le consentement spécifique d'Invacare, ou A un produit endommagé par les circonstances au-delà du contrôle d'Invacare, et telle évaluation sera seulement déterminée par Invacare. La garantie ne s'appliquera pas aux problèmes résultant de l'usure normale, l'usage sur un cylindre de formation intérieur, ou un échec pour adhérer à ces instructions.

La garantie qui précéde est exclusive et au lieu et place de toutes les autres garanties expresses. Les garanties implicites, si n'importe lequel, y compris les garanties implicites de valeur marchande et de santé pour un but particulier, ne s'étendra pas au-delà de la durée de la garantie expresse a fourni en ceci et le remède pour les violations de garantie implicite sera limité pour réparer ou le remplacement du produit défectueux conformément aux termes a contenu en ceci. Invacare ne sera pas responsable de des dommages conséquents ou accessoires que ce soit.

CETTE GARANTIE SERA ETENDUE POUR SE CONFORMER A DECLARE/PROVINCIAL LOIS ET AUX CONDITIONS.

1.4 European Limited Warranty Information and Customer Service

For more information on Limited Warranty within Europe, please contact the Invacare representative within your country.

Belgium & Luxemburg:
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Danmark:
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denmark@invacare.com, www.invacare.dk

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European Distributor Organisation:
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contactsp@invacare.com, www.invacare.es

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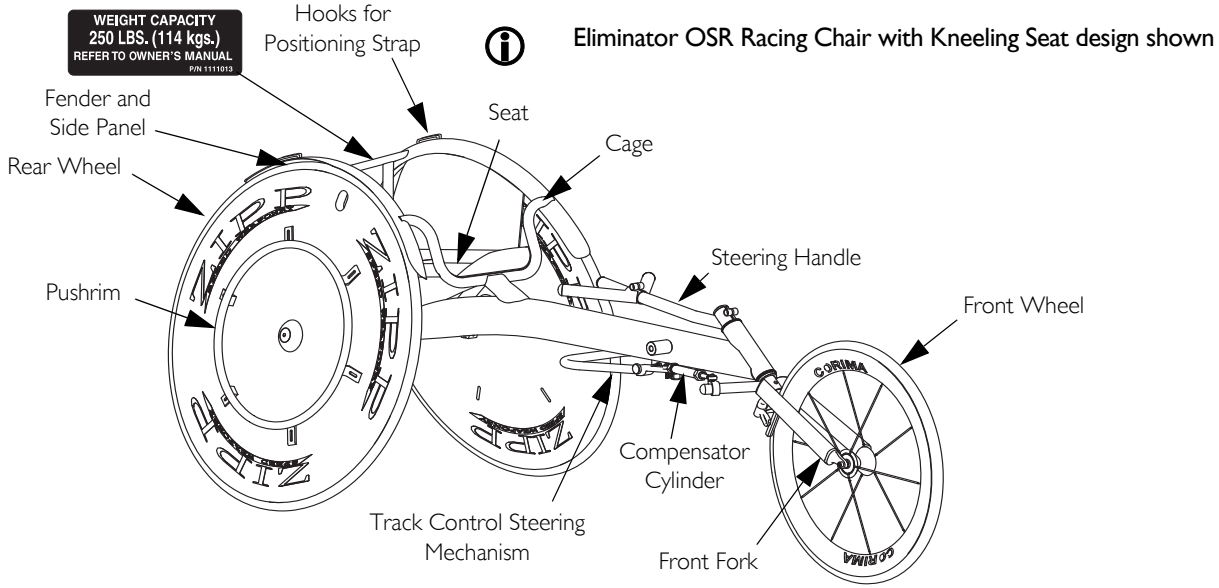
2 Overview

2.1 Label Location and Component Identification



2.2 Typical Product Parameters

Upper Inside Frame Width:	Custom
Seat Style:	Standard or Kneel Position
Cage Style:	I, V, Open V, or U Cage
Lower Inside Seat Width (Seat Cage):	Inside Seat measurement to allow for hip space - snug is preferred
Axle Position (from rear of Racing Chair):	5 to 8 inches
Seat Height/Angle (height from floor) Rear: Front:	 16, 17, 18 or 19 inches Standard Position - 15, 16, 17 or 18 inches, Kneel Position - Seat Angle: 10°, 15° or 20°
Overall Length (Front Wheel to Rear Wheel):	68 to 76 inches
Camber:	11 to 15 degrees
Rear Wheel Size (diameter):	700C spoked performance
Rear Axle (diameter):	$^1/_2$ - inch threaded
Pushrims (diameter):	Rubber coated - 13 to 16 inches
Front Wheel Size (diameter):	20 inches (carbon fiber optional)
Brake:	Hand Caliper
Weight:	17 lbs
Shipping Weight:	27 lbs
Standard Equipment:	Brake, Positioning Straps (25", 30", 35"), Tool Kit, Allen Tools, Pushrims, Headset, Front Wheel and Side Guards
Options: *see order form	Aluminum Knee Plate, Aluminum Seat, Fixed Footrest, Helmet, Cordless Speedmeter, Additional Straps, Cushion, Racing Suit, Wheel Bag, Carbon Fiber Wheel Upgrade, Safety Flag, Safety Lights, Click Straps, Alignment Gauge

2.3 Tire Pressure Conversion

PSI rating is printed on the side of the tire.

Conversion formula: 1 psi = 6.895 kPa (approx. 7 kPa).

PSI	KILOPASCALS	PSI	KILOPASCALS	PSI	KILOPASCALS	PSI	KILOPASCALS
50	345	70	483	90	621	110	758
55	379	75	517	95	655	115	793
60	414	80	552	100	690	120	827
65	448	85	586	105	724		

3 Safety

The safety section contains important information for the safe operation and use of this product.

The Invacare® Eliminator™ OSR racing chair is custom built to make the most of each athlete's potential by matching up the athlete's ability with the optimum position. The standard position is recommended for athletes who have limited balance and need more of a bucket or squeeze position. The athlete can sit in the traditional position with his/her feet on a footplate or use it in the kneeling position which makes it the ideal choice for beginners. The kneeling position is best for experienced athletes with good balance who only kneel in their chair or need an amputee seat.

3.1 General Guidelines

WARNING

DO NOT use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as owner's manuals, service manuals or instruction sheets supplied with this product or optional equipment. If you are unable to understand the warnings, cautions or instructions, contact a healthcare professional, dealer or technical personnel before attempting to use this equipment - otherwise, injury or damage may occur.

A qualified technician MUST perform the initial set up of this wheelchair. also, a qualified technician must perform all procedures specifically indicated in the manual.

ACCESSORIES WARNINGS

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

NOTICE

THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.

Check all parts for shipping damage and test before using. In case of damage, DO NOT use. Contact Invacare/Carrier for further instruction.

3.2 Operating Information

WARNING

RACING CHAIR USER

As a manufacturer of racing chairs, Invacare endeavors to supply a racing chair to meet many needs of the end user. However, final selection of a racing chair to be used by an individual rests solely with the user and his/her health care professional capable of making such a selection. Use this information only as a basic guide. The techniques that are discussed on the following pages have been used successfully by many.
The user is responsible for normal upkeep and maintaining the racing chair in proper operating condition.

TRANSPORT

Invacare recommends that a user is NOT transported in vehicles of any kind while in a racing chair. As of this date, the Department of Transportation has not approved any tie-down systems for transportation of a user while in a racing chair, in a moving vehicle of any type.

SERIOUS INJURY CAN OCCUR IN THE EVENT OF A FALL FROM THE PRODUCT

Feet MUST be secure. Use hook and loop straps to secure feet before use of the racing chair.

BRAKES

If the brake cable show signs of wear, the cable MUST be replaced or the brake may fail.

ALWAYS check the function of the brake. Be sure that the brakes and all other features of your racing chair are operating properly. Should the primary brake fail, place a gloved hand on a rear wheel to slow the racing chair to a stop.
Care, consideration and practice MUST be taken and observed in the following safety points. Otherwise, injury or damage may occur.
Safe use requires the close attention of the user as well as the assistant. This user manual points out the most common procedures and techniques involved in the safe operation and maintenance of the racing chair. It is important to practice and master these safe techniques until you are comfortable in maneurvering the racing chair.
A helmet MUST ALWAYS be worn when operating the racing chair.

WARNING - RISK OF INJURY OR DAMAGE

The manufacturer is not responsible for failure, damage or injury caused by improper operation or maintenance by the end-user.

To determine and establish your particular safety limits, practice transferring activities in the presence of a qualified health care professional before attempting active use of the racing chair.

Operation of the racing chair is subject to all traffic rules and regulations. (This may include the use of a safety lights and reflectors for dusk/night riding.) Give pedestrians the right of way.

Slow down when turning or cornering, otherwise injury or damage may occur.

Use proper hand signals when turning.

Slow down at all street intersections and observe to the right, to the left and back to right again before proceeding.

DO NOT attempt to move up or down an incline with an ice or oil film. Avoid all surface hazards.

DO NOT attempt to ride over curbs or obstacles or speed bumps. Doing so may cause your racing chair to "bottom out" and/or turn over and cause bodily harm or damage to the racing chair.

DO NOT attempt to lift the racing chair by any removable (detachable) parts. Lifting by means of any removable (detachable) parts of an racing chair may result in injury to the user or damage to the racing chair.

DO NOT stand on the seat or frame of the racing chair.

DO NOT carry any riders.

DO NOT carry any items that may obstruct your view or prohibit you from operating the racing chair properly.

Invacare strongly recommends that the racing chair be boxed or otherwise protected before transporting by an airline carrier.

WEIGHT LIMITATION

The Invacare Eliminator OSR Racing Chair has a weight limitation of 250 lbs (114 kg).

BRAKE

If necessary, adjust the location of the brake on the steering handle for easy access during use.

NEVER use the brake for immediate stops. Using the brake for immediate stops can make the front wheel lock up (skid) causing the front tire to blow and go flat. If you must stop immediately, grab the rear wheels with GLOVED hands.

The brake is designed for managing safe operation of the racing chair at speeds greater than ten miles per hour.

WARNING - RISK OF INJURY OR DAMAGE

TIRE PRESSURE

DO NOT use your racing chair unless it has the proper tire pressure (p.s.i.). DO NOT overinflate the tires. Failure to follow these suggestions may cause the tire to explode and cause bodily harm.

DO NOT ride on a flat or under inflated tires. Riding on flat or underinflated tires can cause injury, as well as, damage to the tire, tube and racing chair wheels.

CARBON FIBER WHEELS ONLY - Carbon Fiber Wheels MUST NOT be used when tires are bare or flat. If a flat wheel occurs, STOP IMMEDIATELY. Otherwise, the wheel warranty will be void.

STABILITY AND BALANCE

For stability and proper operation of your racing chair, you MUST at all times maintain proper balance. Turning and cornering affects the stability and balance of the racing chair and user. Your racing chair should remain upright and stable during turns and cornering when operated correctly.

Invacare recommends using positioning strap for additional safety.

A NOTE TO ASSISTANTS

When learning assistance techniques for the racing chair, have an experienced assistant help you before attempting it alone.

When you are assisting with a transfer to/from the racing chair, remember to use good body mechanics. Keep your back straight and bend your knees when lifting or positioning the racing chair for the end-user.

Also, be aware of detachable parts. These must NEVER be used for lifting supports or to move the racing chair, as they may be inadvertently released, resulting in possible injury to the user and/or assistant.

PERCENTAGE OF WEIGHT DISTRIBUTION

The tautness of the back upholstery, knee and/or foot position, as well as the user condition directly relate to the stability of the racing chair. Any change to one or any combination of the three may cause the racing chair to decrease in stability. Turning and cornering will cause a change to the normal balance, the center of gravity, and the weight distribution of the racing chair. To determine and establish your particular safety limits, practice transferring activities in several combinations in the presence of a qualified health care professional before attempting a transfer alone.

Proper positioning is essential for your safety.

3.3 Transferring Into/Out of the Racing Chair

WARNING

Before attempting to transfer in or out of the racing chair, every precaution should be taken to reduce the gap distance. Position the racing chair on level ground and as close as possible to the object you are transferring into or out of.

The tautness of the back upholstery, knee and/or foot position, as well as the user condition directly relate to the stability of the racing chair. Any change to one or any combination of the three may cause the racing chair to decrease in stability.

The object you are transferring into or out of MUST also be secured before attempting any transfer.

KNEELING SEAT UPHOLSTERY

Ensure that feet slide evenly into the foot pouch and avoid the rear wheel spokes. Ensure that the foot pouch is securely latched to the back upholstery. Otherwise, injury can occur.

WHEELCHAIRS

Wheel locks are not brakes.

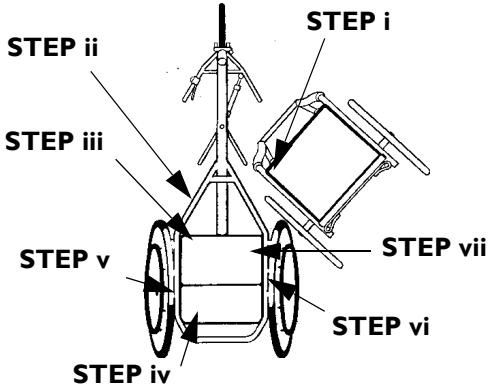
Engaging the wheel locks may not prevent the wheelchair from moving on all floor surfaces including those that may be wet or slick. ALWAYS exercise caution when transferring into or out of the wheelchair.

Invacare strongly recommends an experienced assistant help in the transferring to and from the racing chair. The assistant should hold down the front of the racing chair to avoid any instability that may occur.

Some racers will rest on the frame cage of the racing chair half way through the transfer and move the RIGHT hand to the right side of the frame.

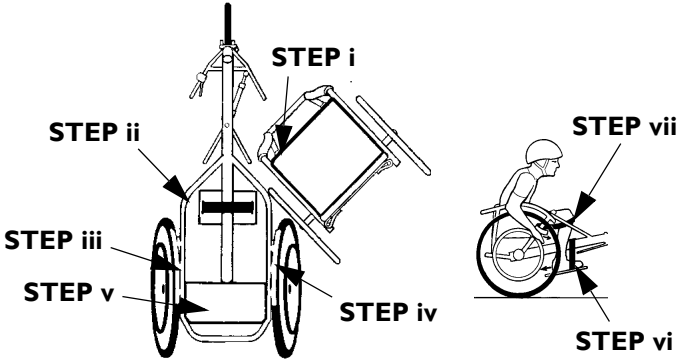
1. Perform one of the following:
   A. Kneeling Upholstery Transfer
      i. Position the chair as close as possible along side the seat to which you are transferring.
      ii. Shift body weight to the edge of the wheelchair upholstery closest to the racing chair.
      iii. Place LEFT leg on top of the LEFT cage frame.
      iv. Start RIGHT leg into the kneeling upholstery and UNDER the seat sling.
      v. Start LEFT leg into the kneeling upholstery and UNDER the seat sling.
      vi. Place LEFT hand on the frame cage.
      vii. Place RIGHT hand on the racing chair frame.
      viii. Lift and shift weight into racing chair upholstery.
      ix. Tighten straps and the top of the fender.
   A. Standard Upholstery Transfer
      i. Position the chair as close as possible along side the seat to which you are transferring.
      i. Shift body weight to the edge of the racing chair upholstery closest to the racing chair.
      ii. Place LEFT leg through the opening in the frame cage.
      iii. Place LEFT hand on the frame cage.
      iv. Place RIGHT hand on the wheelchair frame.
      v. Lift and shift weight into the racing chair upholstery.
      vi. Strap feet onto the footplate.
      vii. Strap the knees up into a safe and comfortable position.
      viii. Tighten straps and the top of the fender.

Kneeling Upholstery Transfer



Standard Upholstery Transfer

Once seated in the racing chair, move your feet back as close as possible to the axle as you feel comfortable and tighten the knee strap.



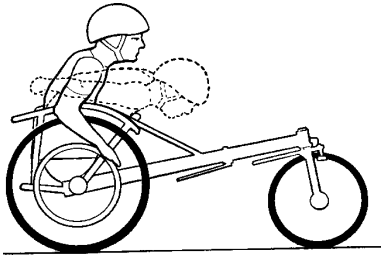
3.4 Reaching and Bending Forward, Backward or Sideways

WARNING

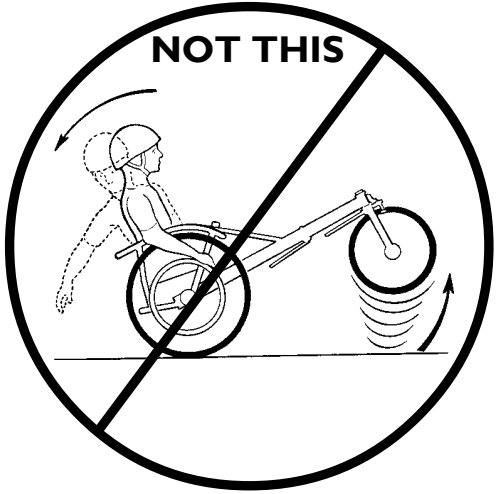
DO NOT sit erect or lean over the top of the back upholstery. This will change your center of gravity and may cause you to tip over.

Position the racing chair as close as possible to the desired object. Reach back only as far as your arm will extend without changing your sitting position.

DO THIS



NOT THIS



4 Safety Inspection/Troubleshooting

Every six months or as necessary, take your Top End racing chair to a qualified technician for a thorough inspection and servicing. Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your racing chair. For safe and proper operation, your racing chair MUST be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your racing chair.

4.1 Safety Inspection Checklist

Initial adjustments should be made to suit your personal body structure and preference. Thereafter follow these maintenance procedures:

Inspect/Adjust Initially and Weekly

- ❑ Make sure that the racing chair rolls straight (no excessive drag or pull to one side).
- ❑ Inspect seat and back upholstery for rips or sagging.
- ❑ Inspect that rear wheel axles are securely tightened.
- ❑ Inspect that there is no excessive side movement or binding when rear wheel is lifted and spun.
- ❑ Inspect pushrims for signs of rough edges or peeling of rubber coating where it might separate from the pushrim.
- ❑ Inspect spokes for bent or broken spokes.
- ❑ Inspect that all spokes are uniformly tight.
- ❑ Inspect front wheel/fork assembly for proper tension by front wheel; front wheel should come to a gradual stop. Loosen/tighten allen screws if wheel wobbles noticeably or binds to a stop. There will be some play in the front wheel.
- ❑ Inspect that the wheel bearings are clean and free of moisture.
- ❑ Inspect that the brake does not interfere with front wheel when rolling.
- ❑ Inspect that the brake is easy to engage.
- ❑ Inspect that there is no excessive wear of brake pads.

CAUTION

As with any vehicle, the wheels and tires should be checked periodically for cracks, flat spots and wear, and should be replaced.

- ❑ Inspect tires for flat spots and wear.
- ❑ Check pneumatic tires for proper inflation.
- ❑ Check frame cage for interference with tires.
- ❑ Clean upholstery with light detergent and water.
- ❑ Inspect for bent or broken frame.

- ❑ If installed, inspect the fixed footrest mounting hardware to ensure it is tight and the footrest secure.
- ❑ Inspect footrest straps for wetness and/or damage.
- ❑ Inspect seat positioning straps for any signs of wear. Replace if necessary.

Inspect/Adjust Monthly

- ❑ Inspect that rear wheel axles are securely tightened.
- ❑ Inspect front wheel/fork assembly for proper tension by front wheel; front wheel should come to a gradual stop. Loosen/tighten allen screws if wheel wobbles noticeably or binds to a stop. There will be some play in the front wheel.
- ❑ Inspect that the wheel bearings are clean and free of moisture.
- ❑ Inspect that the brake does not interfere with front wheel when rolling.
- ❑ Inspect that there is no excessive wear of brake pads.

Inspect/Adjust Periodically

- ❑ Make sure that the racing chair rolls straight (no excessive drag or pull to one side).
- ❑ Inspect upholstery for rips or sagging.
- ❑ Inspect that rear wheel axles are securely tightened.
- ❑ Inspect that there is no excessive side movement or binding when rear wheel is lifted and spun.
- ❑ Inspect pushrims for signs of rough edges or peeling of tire/tape coating where it might separate from the pushrim.
- ❑ Inspect that the wheel bearings are clean and free of moisture.
- ❑ Inspect that the brake is easy to engage.
- ❑ Clean upholstery with light detergent and water.

4.2 Troubleshooting

Veers Right	Veers Left	Sluggish Turn or Performance	Squeaks and Rattles	Looseness in Chair	Solutions
X	X	X			Check tires for correct and equal pressure
X	X				Check for loose stem nuts
			X	X	Check spokes and nipples
		X	X	X	Adjust track control steering mechanism
		X		X	Check toe in/toe out

4.3 Suggested Maintenance Procedures

WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may result.

DO NOT overtighten hardware attaching to the frame. This could cause damage to the frame tubing.

1. Before using your Invacare Top End Eliminator or Eliminator OSR, check all parts for damage or wear and replace, if necessary. Check all parts for proper adjustment.
2. Keep axles free of dirt and lint to ensure proper fit in axle receiver. Cross threading will damage the axles and axle receivers.
3. Check tires for proper pressure and if not inflated properly, inflate to recommended tire pressure listed on the side wall of the tire.
4. The wheels and tires should be checked periodically for cracks and wear, and should be replaced by a qualified technician.
5. Regularly check for loose spokes in the rear and front wheels. If loose, have them adjusted by a qualified technician.
6. Periodically check pushrims to ensure they are secured to the rear wheels.
7. Periodically adjust brake in correlation to brake pad wear.
8. Periodically check rear and front wheel bearings to make sure they are clean and free from moisture. Use a Teflon® lubricant if necessary.
9. Check upholstery for sagging, rips or tears.

5 Initial Setup

WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Assembling the Eliminator Racing Wheelchair

1. Use an Allen key to remove the fork cap.
2. Remove the top three pieces of hardware (two washers and a bearing) from the fork. Two other washers and a bearing must stay in place on the fork. DO NOT remove them.
3. Insert the fork into the frame headtube.
4. Put two washers and bearing onto the fork.
5. Put the steering handle onto the fork.

STEP 1

STEP 2

STEP 3

STEP 4

STEP 5

6. Put the fork cap onto an Allen wrench.
7. Attach the fork cap to the fork. Tighten securely.
8. Put the compensator cylinder clamp onto the steering handle. Remove the screw from the compensator cylinder clamp with an Allen wrench.
9. Put the compensator cylinder and screw in place on the compensator cylinder clamp. Tighten the screw securely.

STEP 6

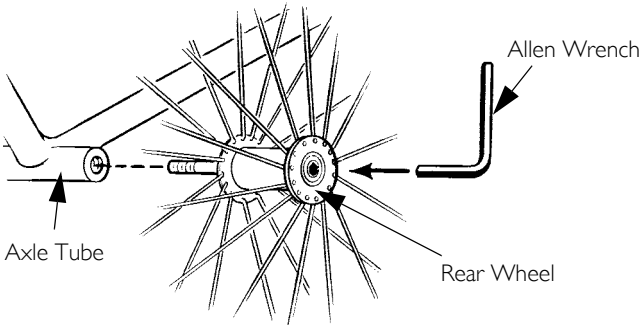
STEP 7

STEP 8

STEP 9

There is a RIGHT and LEFT rear wheel. The pushrims should be pushing into the spokes at the top of the rear wheel.

10. Determine the right and left rear wheel.
11. Apply a small amount of grease onto the axle.
12. Let some air out of the tire so it will fit under the fender.
13. Insert the axle into the axle tube on the racing chair frame and guide rear wheel under fender.
14. Securely tighten the axle to the racing chair frame using the allen wrench. If the axle does not thread smoothly, DO NOT force. Line up and try to thread again.



6 Operation

WARNING

Before using your Invacare Top End Eliminator or Eliminator OSR, check all parts for damage or wear and replace, if necessary. Check all parts for proper adjustment.

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Before operating the handcycle, review the General Guidelines in this user manual.

1. Transfer into the racing wheelchair.
2. Check and adjust the upholstery if necessary.

WARNING

If the racing chair is equipped with kneeling upholstery, always ensure the footpouch is securely latched to the back upholstery. Otherwise, injury may occur.

3. Check Brakes.
   - Check cable for signs of wear or fraying.
   - Squeeze the brake lever firmly and check for proper brake function.
   - Adjust for pad wear if necessary.
   - Check pads for wear and replace if necessary.
4. Secure feet on the fixed footrest (if installed), on the plastic foot plate or if sitting in the kneel only position, within the foot pouch which is part of the kneeling upholstery.
5. Place at least one hand on the handrim(s). Rotate the handrim forward (toward the front) to propel the racing chair forward.

7 Handling

WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

7.1 Adjusting the Track Control Steering Mechanism for Straights and Turns

The procedures in this section apply to a counter-clockwise race track. Reverse the right and left instructions for a clockwise race track.

Different speeds and conditions will affect the way the racing chair handles. Extreme crosswinds should be taken into consideration.

Adjustments to the track control steering mechanism should be made while sitting in the racing chair.

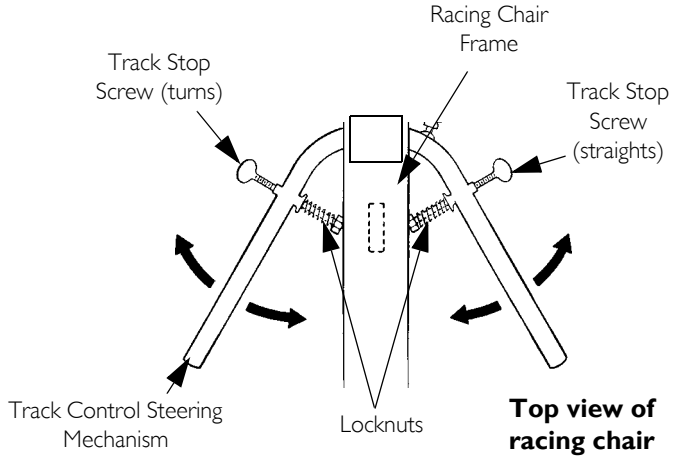
To prevent disqualification it is critical that the track control steering mechanism be set to control the chair within the assigned lane and at the speed you intend to race at.

Straights

1. Turn front wheel until it is approximately in a straight line.
2. Turn the right track stop screw until the locknut on the track stop is touching the racing chair frame.
3. Repeat STEPS 1-2 until the racing chair follows a straight line.

Turns

1. Turn front wheel until in required position for turn.
2. Turn the left track stop screw until it is touching the racing chair frame.
3. Repeat STEPS 1-2 until racing chair follows the desired turn.



Top view of racing chair

8 Upholstery

WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

If the racing chair is equipped with kneeling upholstery, always ensure the footpouch is securely latched to the back upholstery. Otherwise, injury may occur.

8.1 Adjusting Back Upholstery

1. Unlatch the three fastening flaps that secure the back upholstery to the racing chair frame.
2. Adjust the back upholstery to the desired tautness.
   - TIGHTER - upholstery will increase the stability and maintain normal maneuverability of the racing chair because the user is pushed forward in the racing chair slightly.
   - LOOSER - upholstery will increase the maneuverability and make the racing chair less stable because additional weight is being distributed onto the rear wheels.

8.2 Adjusting Foot Pouch

1. Unlatch three fastening flaps.
2. Adjust the foot pouch to the desired tautness.

9 Footrest

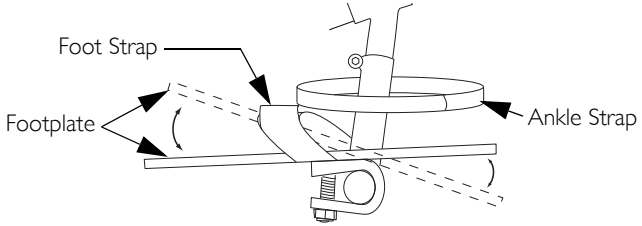
WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Feet MUST be secured into the fixed footrest BEFORE using racing chair. Otherwise injury or damage may occur.

9.1 Using Fixed Footrest or Plastic Footplate

1. Place feet onto footrests or plastic footplate. Secure with hook and loop fastener.
2. Secure ankles by wrapping ankle strap around lower footrest support tube and ankles.



9.2 Adjusting Fixed Footrest

Height

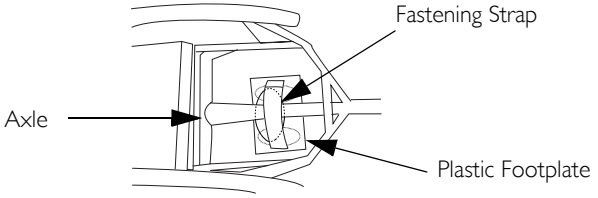
1. Loosen the set screw securing the upper and lower footrest support tubes.
2. Reposition the footrest up or down as desired.
3. Tighten the set screw to secure the upper and lower footrest support tubes.

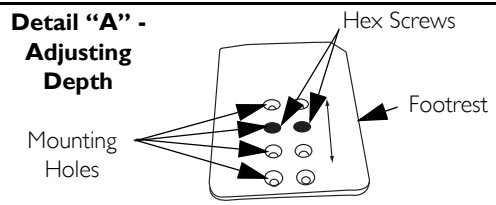
Angle

1. Loosen the locknuts securing the footrest mounting bracket.
2. Adjust the angle of the footrest as desired.
3. Tighten the locknuts securing the footrest mounting bracket.

Depth

1. Remove the locknuts and hex screws securing the footrest mounting bracket.
2. Position the footrest to the desired set of mounting holes.
3. Install the hex screws through the footrest, footstrap and footrest mounting bracket.
4. Secure the hex screws with the locknuts. Tighten securely.





10 Wheels

WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

10.1 Determining Toe In/Toe Out

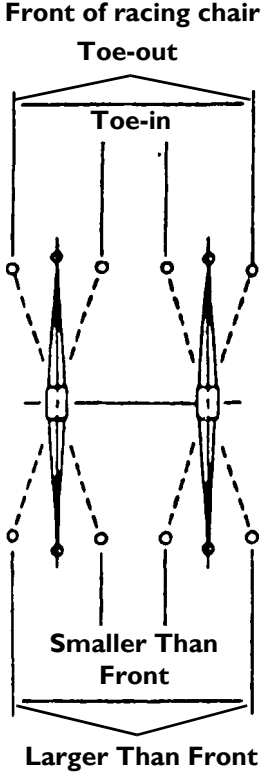
1. Inflate all pneumatic tires to recommended tire pressures (listed on the sidewall of the tire).
2. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12 inches from the ground/floor.

   For optimum accuracy, perform STEP 2 with the racing chair occupied.

   STEP 2 may be performed with using alignment gauge (available as an option for the racing chair).

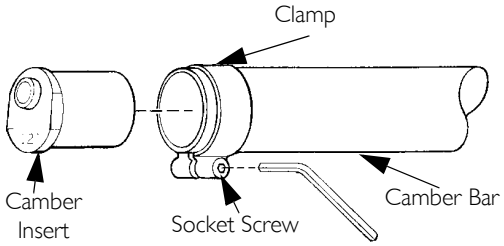
3. Determine the difference between the two measurements. If the difference between the two measurements is greater than 1/2-inch (0 ± 1/4 inch for maximum rollability), one of two conditions exists:
   - If the rear centerline measurement of the rear wheels is SMALLER than the front centerline measurement of the rear wheels, a toe-out condition exists.
   - If the rear centerline measurement of the rear wheels is LARGER than the front centerline measurement of the rear wheels, a toe-in condition exists.
4. If the difference between the measurements is greater than 1/8-inch, correct the toe-in/toe-out condition.

Top View of racing chair



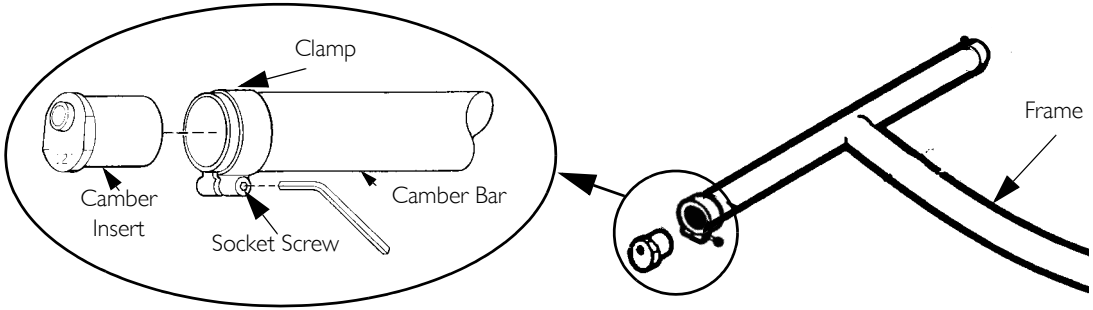
10.2 Adjusting Toe In/Toe Out

1. Loosen, but do not remove the socket screws and clamps that secure camber inserts to the camber bar.
2. Slowly rotate the camber insert until the rear wheels are approximately in a straight line.
3. Securely tighten the socket screws and clamps that secure the camber inserts to the camber bar.
4. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12 inches from the ground/floor.
5. Repeat STEPS 1-4 until the toe in/toe out measurement is less than 1/8-inch (for maximum rollability).



10.3 Replacing Camber Inserts

1. Loosen, but do not remove the socket screws and clamps that secure the camber inserts to the camber bar.
2. Remove the existing camber insert from the camber bar.
3. Install the new camber insert into the camber bar.
4. Adjust the toe in/toe out of the racing chair. Refer to Adjusting Toe In/Toe Out on page 29.



11 Brakes

WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

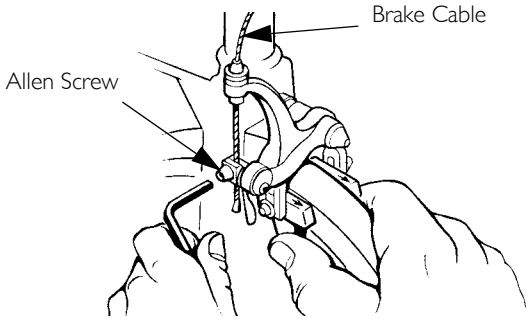
11.1 Adjusting Brake Sensitivity

WARNING

Before using the racing chair, inspect the brake and brake pads for proper operation and wear. Replace if worn.

1. Loosen the allen screw that maintains the tautness of the brake cable.
2. Squeeze both brake pads with your hand to adjust the brake cable.
3. Loosely tighten the allen screw to ensure that the brake is adjusted properly.

   When the brake is engaged, the brake pads should rest solely on the rim of the wheel. If not, adjust the brake pads.
4. Repeat this procedure until the brake is adjusted properly.
5. Securely tighten the allen screw that maintains the tautness of the brake cable.

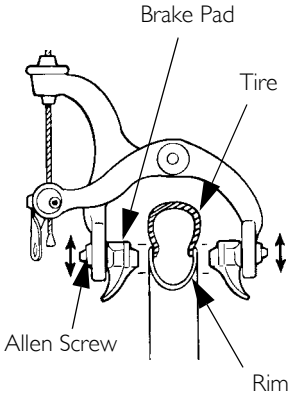


11.2 Adjusting Brake Pads

WARNING

Before using the racing chair, inspect the brake and brake pads for proper operation and wear. Replace if worn.

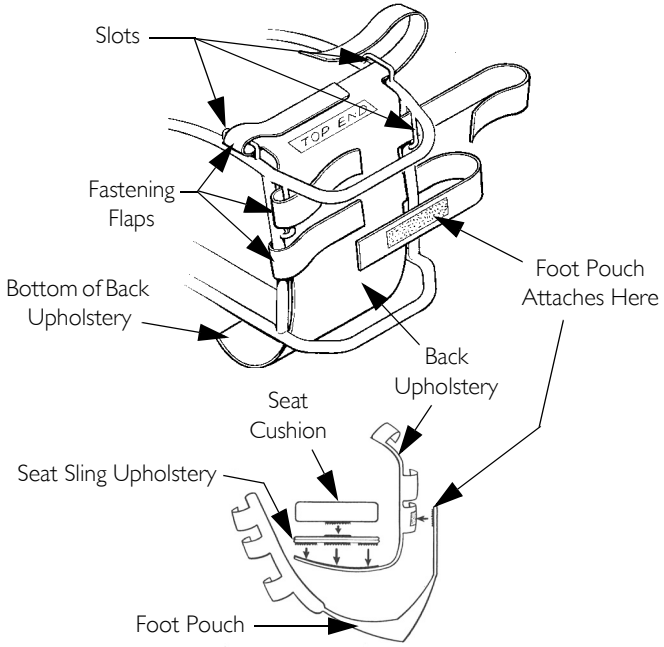
1. Loosen the allen screw that secures the brake pad to the brake.
2. Position the brake pad until it is in-line with the rim of the front wheel.
3. Securely tighten the allen screw that secures the brake pad to the brake.
4. Repeat this procedure for the opposite side.
5. Adjust the brake.



12 Service Procedures

12.1 Replacing Back Upholstery

1. Unlatch the three fastening flaps that secure the back upholstery to the racing chair frame.
2. Unlatch the foot pouch of the leg cushion from the back upholstery (kneeling upholstery only).
3. Unlatch the bottom of the back upholstery from the seat sling upholstery.
4. Remove the existing back upholstery from the racing chair.
5. Feed the top two fastening flaps of the new back upholstery through the slots on the racing chair frame.
6. Feed the bottom fastening flap of the new back upholstery between the racing chair frame and the clothing guards.
7. Adjust the back upholstery to the desired tautness.
8. If the racing chair is equipped with kneeling upholstery, attach the foot pouch to the back upholstery and adjust.
9. Adjust the back upholstery to the desired tautness.
    - TIGHTER - upholstery will increase the stability and maintain normal maneuverability of the racing chair because the user is pushed forward in the racing chair slightly.
    - LOOSER - upholstery will increase the maneuverability and make the racing chair less stable because additional weight is being distributed onto the rear wheels.

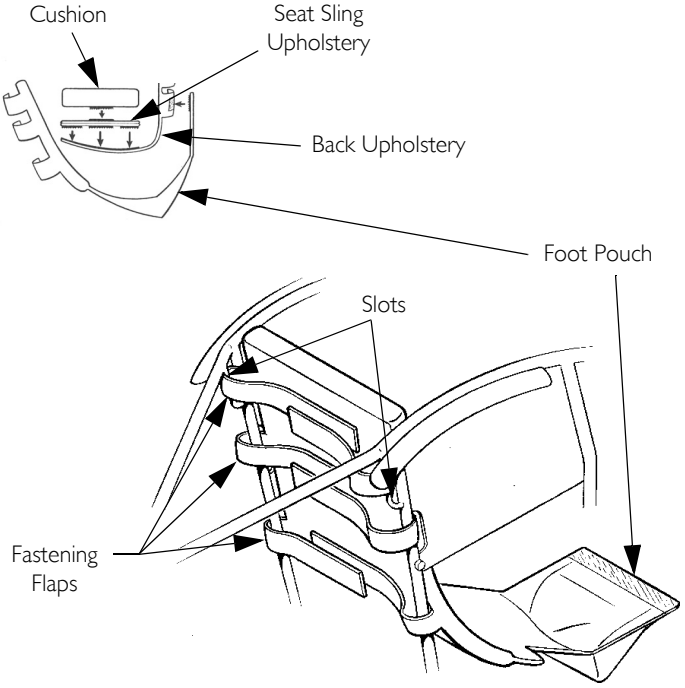


12.2 Replacing Foot Pouch

WARNING

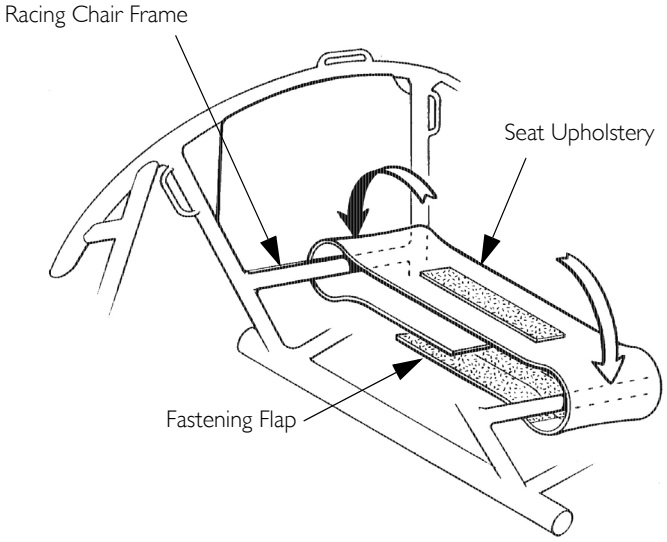
If the racing chair is equipped with kneeling upholstery, always ensure the foot pouch is securely latched to the back upholstery. Otherwise, injury may occur.

1. Unlatch three fastening flaps.
2. Unlatch the foot pouch from the back upholstery and remove the foot pouch.
3. Feed the top two fastening flaps between the side guard and racing chair frame and secure together.
4. Adjust the foot pouch to the desired tautness.



12.3 Replacing Seat Sling Upholstery

1. Remove seat cushion from seat sling upholstery.
2. Unlatch the fastening flap that secures the existing seat upholstery to itself.
3. Slide the ends of the existing seat upholstery up and through the frame of the racing chair.
4. Slide the new upholstery through the frame of the racing chair.
5. Pull the seat upholstery to the desired tautness and secure with the fastening flap.
6. Reverse STEPS 1-5 to reassemble.



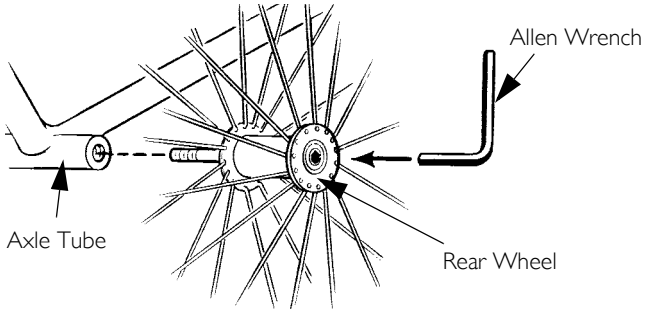
12.4 Repairing/Replacing Rear Wheel Tire/Tube

WARNING

Replacement of a clincher tire or tube MUST be performed by a qualified technician.

Tubular tires are tires with tubes sewn into the tires. They are high pressure (140+ lbs. psi) and MUST be glued to the rim. Once they have a hole in them, they MUST be replaced. Tubular tires will lose air overnight, but they are not faulty. This is a characteristic of tubular tires. Tubular tires DO NOT fit on a clincher rim.

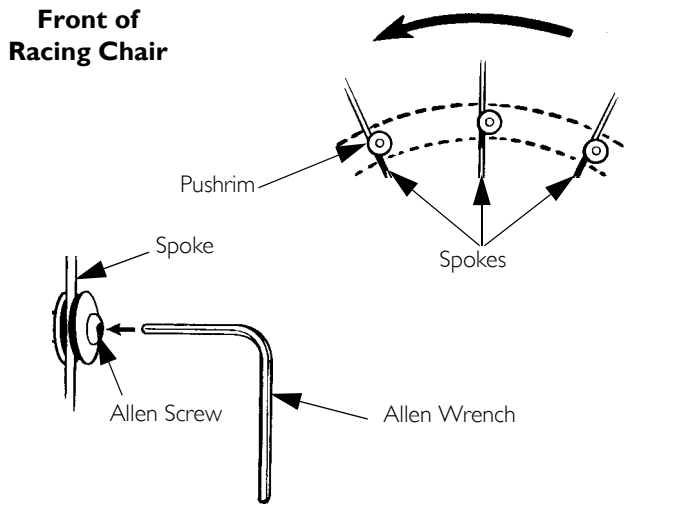
Clincher tires are not like conventional bicycle tires. There is an inner tube separate from the actual tire. They are more durable for longer periods of time and if punctured, the tube can be replaced (by a qualified technician). Clincher tires use 100+ lbs. psi. Clincher tires DO NOT fit on a tubular rim.



12.5 Replacing Pushrims

1. Remove the rear wheel from the racing chair.
2. Loosen the allen screws that secure the existing pushrim to the rear wheel.
3. Remove the existing pushrim.
4. Install the new pushrim onto the rear wheel and securely tighten the allen screws.

   Ensure the rim is pushing onto the spokes at the top of the rear wheel.
5. Reinstall rear wheel onto the racing chair.

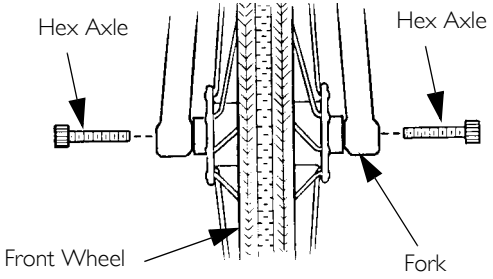


12.6 Removing/Installing Front Wheel

Reverse the steps below to remove the front wheel.

There will be some play in the front wheel. This is common in all front hubs.

1. Remove the two hex axles from the front wheel.
2. Line up the mounting holes in the front wheel with the holes in the forks.
3. Install the hex axles and securely tighten the front wheel to the fork.



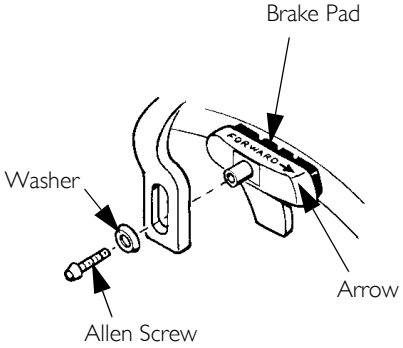
12.7 Replacing Brake Pads

WARNING

Before using the racing chair, inspect the brake and brake pads for proper operation and wear. Replace if worn.

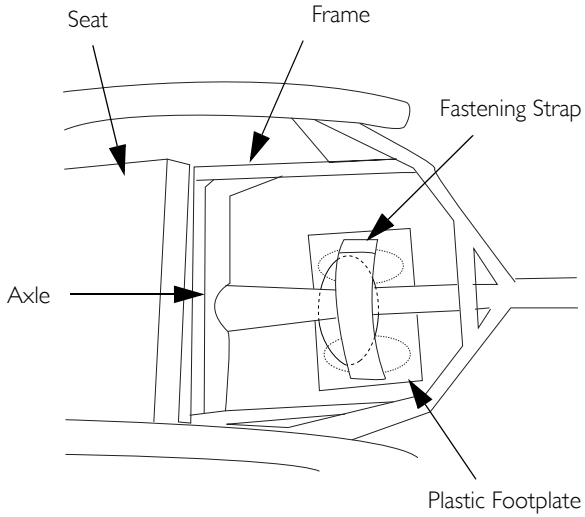
Invacare Top End recommends replacing BOTH brake pads at the same time to achieve the best brake performance as possible.

1. Remove the front wheel.
2. Remove the screws and washers that secure the existing brake pads to the brake.
3. Install the new brake pad with the arrow pointing towards the front of the racing chair with the existing hardware.
4. Repeat this procedure for the opposite brake pad.
5. Install the front wheel onto the racing chair.
6. Adjust the brake pads as necessary.



12.8 Removing/Installing the Plastic Footplate

1. Perform one of the following:
   - To remove, loosen the fastening strap and remove the footplate.
   - To install, secure the fastening straps around the frame.



12.9 Replacing or Adjusting the Track Control Steering Mechanism

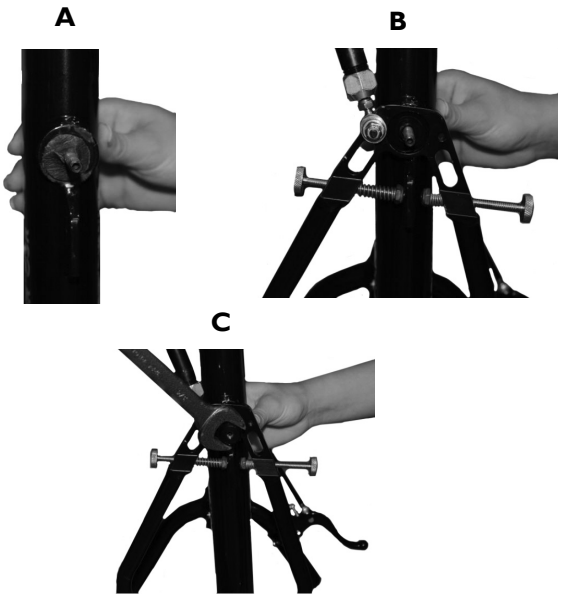
- Replacing
  - A. Make sure that the leather spacer is in place on the bolt (picture A). If not, order a replacement leather spacer.
  - B. Put the track control steering mechanism on the bolt (picture B).

    The bolt in the fork should never be tightened otherwise the loctite seal will be broken.

  - C. Place the nut over bolt and tighten securely (picture C).
- Adjusting
  - A. Loosen or tighten the nut (picture C).

    The nut should not be so tight that the track steering control mechanism won't move or too loose so that the front wheel doesn't turn when using the track control steering mechanism.

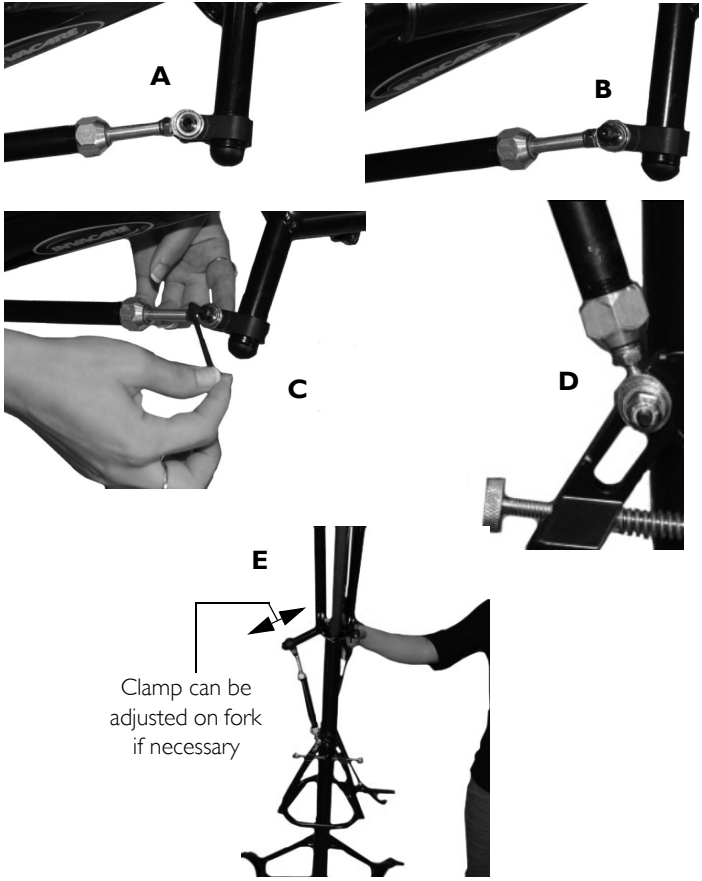
  - B. For fine track control steering adjustment, refer to Adjusting the Track Control Steering Mechanism for Straights and Turns on page 25.



12.10 Compensator Cylinder Replacement

1. Remove
   - A. Loosen and remove the nut (not shown) that attaches one end of the compensator cylinder to the track control steering mechanism.
   - B. Remove the bolt and nut (not shown) that attach the compensator cylinder to the clamp on the fork.
2. Replace
   - A. Put the end of the compensator cylinder in place on the clamp (picture A).
   - B. Put the screw into the mounting hole on the clamp (picture B).
   - C. Put a nut on the end of the screw and tighten securely with an Allen wrench (picture C).
   - D. Put the opposite end of the compensator cylinder in place on the track control steering mechanism and attach with a screw and nut (picture D). Tighten securely with an Allen wrench.

ⓘ The racing wheelchair should be aligned straight after assembly. Refer to picture E. The clamp can be moved on the fork if necessary.



13 Options

WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

13.1 Installing Safety Lights

WARNING

Operation of the handcycle is subject to all traffic rules and regulations (this may include the use of a safety lights and reflectors for dusk/night riding).

Batteries

1. Remove the lens cover.
2. Insert the AAA batteries with correct polarity (+ or -).
3. Reinstall lens cover.

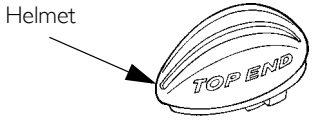
Mounting the Safety Light

1. Remove the set screw from the clamp on the safety light.
2. Install the safety light.
   A. Rear safety light: Pull the back cushion off of the back frame. Position the clamp onto the rear seat post. Install the set screw into the clamp and tighten securely.
   B. Front safety light: Position the clamp onto the side frame. Install the set screw into the clamp and tighten securely.

Operating the Safety Light

1. Press GREY button to turn safety light on/off.
2. Remove lens cover and slide switch back and forth for pulse or constant mode.

13.2 Using Safety Helmet



1. Secure helmet using the chin strap.
2. Ensure proper fit.

13.3 Installing the Computer

1. Install metal plug onto spoke of the racing chair approximately 2 inches from wheel rim.
2. Align metal plug with fork assembly.
3. Secure sensor to fork using hardware provided.

ⓘ Slot in sensor MUST align with metal plug for mileage, etc. to be registered on the computer.

4. Snap computer into mounting bracket.
5. Install spacer on the back of the computer mounting bracket.
6. Secure mounting bracket to crank bottom bracket with zip or wire ties.

13.4 Assembling/Adjusting/Using the Bike Rack

WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

Assembling the Bike Rack

1. Position the receiver with the bracket facing up.
2. Position the rear wheel bar with the wheel brackets facing up.
3. Remove the two large mounting bolts and locknuts from the receiver and set aside.
4. Remove the two small mounting bolts and locknuts from the receiver bracket and set aside.
5. Secure the wheel tray to the receiver with the two large mounting bolts and locknuts.
6. Using two small mounting bolts and locknuts, secure the receiver bracket to the wheel tray.
7. Remove the two mounting bolts and locknuts from the rear wheel bar and set aside.
8. Using two mounting bolts and locknuts, secure the rear wheel bar to the wheel tray.
9. Install the receiver onto the trailer hitch of the vehicle, according to the vehicle manufacturer's instructions.

Adjusting the Bike Rack

WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may occur.

To properly secure the racing chair, the wheel tray bracket should be adjusted to sit against the front wheel.

Wheel Tray Bracket

1. Remove the four mounting bolts and locknuts securing the wheel tray bracket to the wheel tray.
2. Position the wheel tray bracket in the desired position.
3. Secure the wheel tray bracket to the wheel tray with the four mounting bolts and locknuts.

4. If necessary, the wheel stop may be adjusted to one of three positions to sit against the front wheel. To adjust the wheel stop, perform the following steps:
   A. Remove the mounting bolt and locknut securing the wheel stop to the wheel tray bracket.
   B. Position the wheel stop in the desired mounting position.
   C. Secure the wheel stop to the wheel tray bracket with the mounting bolt and locknut.

Rear Wheel Bar Brackets

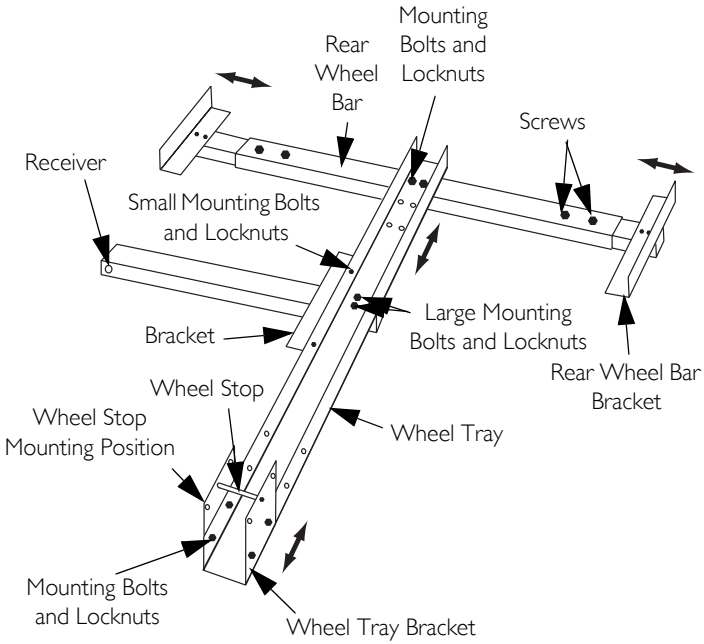
To properly secure the racing chair, the rear wheel bar brackets should be adjusted to sit against the rear wheels.

1. Loosen the two screws securing the rear wheel bar bracket to the rear wheel bar.
2. Adjust the rear wheel bar bracket in/out until they sit against the rear wheel.
3. Secure the rear wheel bar bracket to the rear wheel bar with the two screws.
4. Repeat steps 1-3 for the opposite side if necessary.

Rear Wheel Bar

To properly secure the racing chair, the rear wheel bar should be adjusted so the rear wheels sit in the rear wheel bar brackets.

1. Remove the two mounting bolts and locknuts securing the rear wheel bar to the wheel tray.
2. Position the rear wheel bar to one of three mounting positions on the wheel tray.
3. Secure the rear wheel bar to the wheel tray with the two mounting bolts and locknuts.

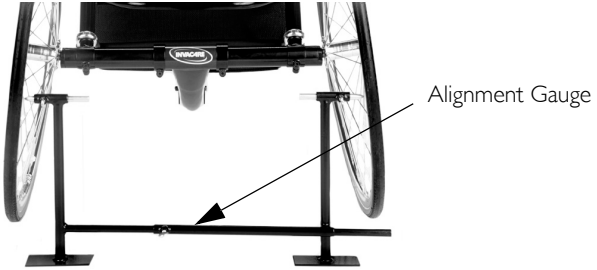


Using the Bike Rack

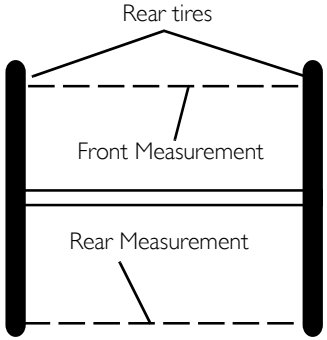
1. Position the racing chair on the rack with the front wheel in the wheel tray bracket.
2. Adjust the bike rack so the wheel tray bracket sits against the front wheel and the rear wheel bar brackets sit against the rear wheels.
3. Secure the front wheel to the wheel tray bracket using the strap provided.
4. Secure the rear wheels to the rear wheel bar using the straps provided.

13.5 Using the Alignment Gauge

1. Inflate the tires to recommended tire pressures (listed on the sidewall of the tire).
2. Place the racing chair and alignment gauge on a flat surface.
3. Position the alignment gauge near the rear of the rear tires.
4. Loosen the alignment screw on each side.
5. Position the alignment gauge between the rear of the rear tires.
6. Adjust the alignment inserts so the alignment gauge fits snugly between the rear of the rear tires.
7. Tighten the alignment screws to secure the alignment bar position.
8. Position the alignment gauge at the front of the rear tires and repeat.
9. Examine the gauge. Perform one of the following:
   - A. If the alignment gauge fits snugly between the front of the rear tires, the wheels are aligned. No toe in/toe out adjustment is required.
   - B. If there is extra space between the alignment gauge and rear tires, the tires have a toe out condition. Refer to Adjusting Toe In/Toe Out on page 29.
   - C. If the alignment gauge does not fit between rear tires, the tires have a toe in condition. Refer to Adjusting Toe In/Toe Out on page 29.



Front of Racing Chair



Rear of Racing Chair

13.6 Additional Options

These options are available for order through www.topendwheelchair.com or 1-800-532-8677.

A - Heart rate monitor

The monitor is usually mounted on the crank assembly.

The user attaches the heart rate monitor around his/her chest with a strap that is included with this option.

B - Click Strap

Attach with heavy duty zip ties to the cage.

C - Wheel Bag

Wheel bag can fit up to three wheels.

Remove and place axles in the bottom of the wheel bag to ensure they are not damaged.

D - Plastic Footplate with Strap

E - Fixed Footrest.

F - Cushion

G - Safety Flag

Mount safety flag in holder secured to back tube on bike frame.

A

B

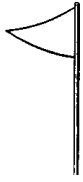
C

D

E

F

G



NOTES

Yes, you can.

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